

REMARKS

The Office Action, on page 2, requires restriction to one of the following groups under 35 U.S.C. §121:

- Group I: claims 13, 19 and claims 1-12, 14-18, 20-40, 46-48, drawn to a compound of formula I, wherein Y=N, Q=IA, classified in class 546, subclass 156, and the composition thereof.
- Group II: claims 1-12, 14-18, 20-40, 46-48 in part, drawn to a compound not included Group I, class and subclass various dependent on the species elected. A species election is also required if this group is elected. Further restriction based on the elected species would also be required.
- Group III: claims 41-42, drawn to a method of inhibiting the infectivity of *Pseudomonas aeruginosa*.
- Group IV: claims 43-45, drawn to a method of treating an immunocompromised subject.
- Group V: claims 49-54, drawn to a method for identifying a compound that modulates an autoinducer molecule in bacteria.
- Group VI: claims 55-56, drawn to a method of regulating the expression of a gene in bacteria.
- Group VII: claim 57, drawn to an inhibitor of the autoinducer activity of 2-heptyl-3-hydroxy-4-quinolone. Class and subclass various dependent on the species elected. A species election is also required if this group is elected. Further restriction based on the elected species would also be required.
- Group VIII: claims 58-62, drawn to an analog of 2-heptyl -3-hydroxy-4-quinolone. Class and subclass various dependent on the species elected. A species

election is also required if this group is elected. Further restriction based on the elected species would also be required.

Group XI[IX]: claims 63-64, drawn to a method for modulating quorum sensing signaling in bacteria.

Applicants are required to elect one of the above groups for prosecution on the merits. The Office Action further indicates that if Applicants elect Group I or Group II, then Applicants may also elect a method from Groups III-VI and IX.

Applicants respectfully traverse the requirements for restriction and election, and submit that the requirements are improper. First, Applicants assert that the subject matter of these groups represent different embodiments of a single inventive concept for which a single patent should issue. The pending claims represent an intricate web of knowledge, continuity of effort, and consequences of a single invention, which merit examination of all of these claims in a single application. More particularly, all of the claims are linked by a single, searchable, unifying aspect; *i.e.*, the compounds of Formula I, or related compounds thereto, and the methods of use associated with the modulation of an autoinducer system of bacteria, *e.g.*, modulation of genes, resulting proteins or signaling mechanisms, and resulting therapeutic effects on a subject.

Second, Applicants submit that a sufficient search and examination with respect to the subject matter of all claims can be made without serious burden. As the M.P.E.P. states:

If the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits, even though it includes claims to independent or distinct inventions.

M.P.E.P. § 803 (7th ed., Rel. 78A, March 1999).

That is, even if the above-enumerated groups of claims are drawn to distinct inventions, the Examiner must still examine the entire application on the merits because doing so will not result in a serious burden.

The Office Action states on page 3, second paragraph, that Groups III-VI and IX are distinct from Groups I, II, VII, and VIII because the compounds of the latter “may be used in materially different processes,” such as inhibiting infectivity, treating immunocompromised subject, regulating gene expression, modulating quorum sensing signaling in bacteria, and identifying autoinducer molecule compounds. However, these processes, as described above, are related as methods of use associated with the modulation of an autoinducer system of bacteria, *e.g.*, modulation of genes, resulting proteins or signaling mechanisms, and resulting therapeutic effects on a subject. Therefore, Applicants submit that the search and examination of all the claims will have substantial overlap, and no serious burden will result from searching and examining all claims of Groups I-IX in the same application. Applicant further asserts that at a minimum, the search and examination of the method claims of Groups III-VI and IX in the same application would involve substantial overlap, and thus not result in serious burden upon the Examiner.

In addition, the Office Action, at page 3, first paragraph, asserts that Groups I, II, VII, and VIII are “structurally distinct” as evidenced by the fact that “they have acquired a separate status in the art as shown by their different classification.” However, Groups I through IX appear to have the same classification, *i.e.*, class 546, subclass 156. The statement in the Office Action at page 3, first paragraph, to the effect that the groups “have acquired a separate status in the art as shown by their different classification, is inaccurate, as the same classification is shown for all of the 9 groups, class 546, subclass 156 (indicated in Group I, page 2 of the Office Action). Therefore, Applicants submit that the search and examination of all the claims of that Groups I, II, VII, and VIII will have substantial overlap, and no serious burden will result from searching and examining all claims of that Groups I, II, VII, and VIII in the same application.

Applicants respectfully point out that the compound, 2-heptyl-3-hydroxy-4-quinolone is a *species* of Formula I, and more particularly, Group I as categorized by the Office Action. Furthermore, an analog is defined in the specification on page 12, lines 5-7, to include:

compounds which are structurally similar but not identical to autoinducer molecules derived from bacteria, such as, for example, N-(3-oxododecanoyl)homoserine lactone and 2-heptyl-3-hydroxy-4-quinolone .

Therefore, Applicants submit, at a minimum, that compounds of Formula I and analogs of a species of Formula I, 2-heptyl-3-hydroxy-4-quinolone, are structurally related such that substantial overlap of searching would result with no serious burden on the Examiner.

In conclusion, in the interest of a savings of time and cost to Applicants and the Patent Office, Applicants respectfully request that all the claims be searched and examined in a single application and that Groups I-IX be rejoined into a single group. Alternatively, Applicants respectfully request that Groups I, II, VII, and VIII be rejoined into a single group and Groups III-VI and IX be rejoined into a single group based on the foregoing arguments. Alternatively, at a minimum, Applicants respectfully request that Groups I and VIII be rejoined based on the foregoing arguments.

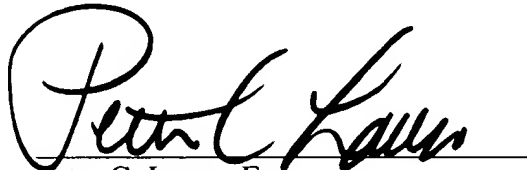
Nevertheless, in compliance with the directives in the Office Action and in order to expedite prosecution of the instant application, Applicants hereby elect, subject to the foregoing traverse, Group I, claims 13, 19 and claims 1-12, 14-18, 20-40-, 46-48, drawn to a compound of formula I, wherein Y=N, Q=IA, classified in class 546, subclass 156, and the composition thereof. In view of the election of Group I, Applicants additionally elect Group III, claims 41-42, drawn to a method of inhibiting the infectivity of *Pseudomonas aeruginosa*.

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Examiner: Huang, E.M.
Group Art Unit: 1625

If a telephone conversation with Applicants' attorney would help expedite the prosecution of the above-identified application, the Examiner is urged to call the undersigned attorney at (617) 227-7400.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Peter C. Lauro", written over a horizontal line.

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